Place and Voicing Restrictions of Velar and Uvular Consonants in Kazakh

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Many Turkic languages have dorsal consonant inventories whereby they exhibit place and voicing restrictions. Previous descriptions contain rather limited amounts of data, which does not allow solid generalisations to be drawn about the full distribution of dorsal consonants. My research aims to bridge the gap in the literature by looking at velar and uvular consonants in Kazakh where the inventory is asymmetrical.

There are a few points already known about dorsals (velars and uvulars) in Kazakh. First, dorsals are restricted depending on their neighbouring vowels (Kara, 2002; Muhamedowa, 2016). Velars appear in words containing front vowels and uvulars appear in words containing back vowels, as shown in (1). Loanwords and words containing [x] are exceptions and can remain nonharmonic.

(1) Distribution of dorsal consonants (after Bekturova & Bekturov, 1996)

VELARS		UVULARS	
køz	‘eye’	**q**ɑʁɑz	‘paper’
je**g**eu	‘file’	**ʁ**ɑlɯm	‘scholar’

Secondly, dorsals are restricted in their voicing at the morpheme boundary, depending on their position in the word (Kara, 2002). Voiceless dorsal consonants appear in the word-final position and voiced dorsal consonants appear in stem-final position intervocalically when followed by a vowel-initial suffix, as shown in (2). It is ambiguous whether it is word-final devoicing or intervocalic voicing.

(2) Distribution of voiceless/voiced dorsal consonants (after Bekturova & Bekturov, 1996; Muhamedowa, 2016)

	VOICELESS		VOICED	
VELAR	kywælɪ**k**	‘identity card’	kywælɪ**g**ɪm	‘my identity card’
UVULAR	qɑbɑ**q**	‘brow’	qɑbɑ**ʁ**ɯ	‘his brow’

Third, there is a fifth dorsal consonant [x] which occurs in loanwords. This sound varies freely with [q] ([xɑt]~[qɑt]) (Bekturova & Bekturov, 1996; Muhamedowa, 2016).

Many questions remain unanswered. Are velars and uvulars contrastive intervocalically? What happens to [x]: does it alternate with [q], [ɡ] or [ʁ]? Is the restriction on velars in words containing front vowels and uvulars in words containing back vowels productive? Does the neighbouring vowel mean before, after or either? Finally, how do we account for the distribution of dorsals theoretically?

To answer the questions above, I conducted elicitation-based experiments with six native Kazakh speakers using real and nonce words and targeted all positions of the word. The results revealed the following. First, the place restriction was not productive. Participants produced the target velars and uvulars in their respective front and back vowel environments for real words but produced the target dorsals regardless of the vowel for nonce words. Also, all participants produced the target /x/ as the voiceless velar fricative with no indication that it freely alternated with [q]. Secondly, the voicing restriction was productive. For real words, participants produced word-final dorsals as voiceless and stem-final dorsals as voiced when followed by a vowel-initial suffix. For nonce words, four participants devoiced all voiced targets in word-final position. The other two participants preserved word-final voiced dorsals when reading from written stimuli but produced voiced targets as devoiced from auditory stimuli. The voiceless targets in stem-final

position were invariably voiced intervocalically when followed by a vowel-initial suffix. In addition, dorsal fricatives revealed unexpected results by maintaining manner over place. Participants did not neutralise word-final [ʁ] to [q], but instead devoiced to [χ] when reading from written stimuli and to [x] when using auditory stimuli. Stem-final [x] voiced to [ʁ] intervocalically when followed by a vowel-initial suffix.

The results raise the following points. For word-final devoicing, the participants that were not devoicing may have treated nonce words as loanwords, even though they were asked to treat them as real words. In many languages, loanwords may allow less restrictive phonotactic requirements than for native words. This phenomenon can be modelled using a co-phonology approach (Inkelas, Orgun & Zoll, 1997; Inkelas & Zoll, 2007) or indexed constraints (Ito & Mester, 2001; Pater, 2007). Also, neutralisation may have been incomplete. This could stem from the influence orthography has on careful speech. If spelling suggests a difference, one might make a distinction during careful speech. This was demonstrated by the two participants not devoicing in word-final position, as well as, all the participants' production of velars with a neighbouring back vowel and uvular with a neighbouring front vowel in nonce words.

For intervocalic voicing, voicing occurs at the local domain of the suffix but not in the identical environment found word-internally. Thus, the morphological boundary constitutes a specific environment for a phonological phenomenon. This can be characterised as a derived-environment effect whereby the phonological process is conditioned morphologically (Burzio, 2011). The indexed constraint theory of lexical exceptions offers the opportunity to propose a morpheme-specific markedness constraint. These constraints are limited to a specific set of suffixes and applies to entire outputs in which the indexed constraints occur. Pater (2007) discusses how a phonological process applies when the conditioned environment contains any portion of an affix in a morphologically-derived environment.

The voicing alternation contributed the most to the description of Kazakh since it was productive across real and nonce words. Along side the results, I capture the voicing phenomena within Optimality Theory (Prince & Smolensky, 1993/2004) using indexed-markedness constraints to account for the morphologically-conditioned phonological process (Pater, 2007) and a Local Conjunction constraint (Crowhurst, 2011) to account for [q] and [x] voicing to [ʁ].

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